

## REMARKS

Claims 1-25 are pending in the application. Attached hereto is a marked-up version titled, "Version with Markings To Show Changes Made".

### *Drawings*

The drawings were objected to based on 37 C.F.R. §1.83(a) as failing to show a cross-sectional area of an initial flow of air into the plenum. Applicant submits herewith new drawing FIGS. 1 through 5. FIG. 4 indicates a cross sectional area of initial flow of air into a plenum. Support for the new drawings may be found through out the specification and particularly at Page 7, paragraph 0024 and page 9, paragraph 0033. Removal of the pending objection is respectfully requested.

### *Claim Rejection 35 U.S.C. § 112, paragraph 2*

By this reply claims 4, 6, 7, 17, and 18 have been amended to more particularly point out and distinctly claim the current subject matter. Removal of the pending rejection under 35 U.S.C. §112, second paragraph is respectfully requested and allowance solicited.

### *Claim Rejection 35 U.S.C. § 102*

#### 35 U.S.C. § 102(b)

Claims 1-3, 5, 8-11, 14-16, 19 and 21-25 stand rejected under 35 U.S.C. §102(b) as being anticipated over Horneff et al. (United States Patent Number 3,824,909), hereinafter *Horneff*. Applicant respectfully disagrees.

With regard to the anticipation rejection under 102 U.S.C. §102(b) of Claims 1-3, 5, 8-11, 14-16, 19 and 21, the Office asserts *Horneff* as anticipating the present invention. Applicant disagrees.

To anticipate a claim, a prior art reference must disclose *every limitation* of the claimed invention, either expressly or inherently. *Rapoport v. Dement*, 254 F.2d 1053, 1057, 59 U.S.P.Q.2d 1215 (Fed. Cir. 2001). (*emphasis added*).

*Horneff* teaches a system for mass air displacement to an occupied room. *Horneff*, Abstract. *Horneff* fails to teach the limitation of a process chamber airflow system as recited in claim 1. Moreover, *Horneff* fails to teach a plenum connected to the blower and

the process chamber as recited in claim 1. In contrast, *Horneff* merely teaches a supply duct utilized to connect the fan 20 to the plenum 24. *Horneff*, FIG. 1.

[A]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*” *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1982) (citing *Connell v. Sears, Roebuck & Co.*, 722 F.2d 1542, 220 USPQ 193 (Fed. Cir. 1984)) (emphasis added).

Claims 2 is believed to be allowable based on its dependency from Claim 1. Removal of the rejection is requested.

In regards to claim 3, *Horneff* teaches the “distribution duct ” is utilized to “distribute the air at a plurality of angles with respect to the horizontal and thereby spreads it out over ceiling 26” *Horneff*, Col. 4, lines 47-53. Thus, *Horneff* teaches a distribution duct for distributing air across the ceiling. As recited in claim 3, the reduction in airflow is utilized to distribute the initial airflow uniformly through the plurality of holes. Removal of the rejection is requested.

With respect to claim 5, the Office cites *Horneff*, Col. 1, lines 36-48 as “regarding claims 5 and 16”. Claim 5 recites disposing a filter between the blower and plenum. In contrast, *Horneff* teaches the “HEPA filters are located within or near the air supply unit”. *Horneff*, Col. 1, lines 38-39. While the term “air supply unit” is not expressly defined as a fan, *Horneff* defines “a fan supplies air through a supply duct”. *Horneff*, Col. 3, lines 16-17. Thus, *Horneff* fails to teach a filter disposed between the blower and plenum. Thus, a *prima facie* case of anticipation is not met. Removal of the pending rejection is respectfully requested and allowance solicited.

Claims 14-15 and 19 are believed to be allowable based on their dependence from claim 13 which has not been rejected under 35 U.S.C. §102. Removal of the pending rejection is respectfully requested and allowance solicited.

Claim 16 is believed to be allowable based on its dependence on claim 13 which has not been rejected under 35 U.S.C. §102. Removal of the pending rejection is respectfully requested and allowance solicited.

Claim 21 recites a method for distributing substantially laminar air flow in a process chamber as noted previously,

To anticipate a claim, a prior art reference must disclose *every limitation* of the claimed invention, either expressly or inherently. *Rapoport v. Dement*, 254 F.2d 1053, 1057, 59 U.S.P.Q.2d 1215 (Fed. Cir. 2001). (*emphasis added*).

Neither the cited portion of *Horneff* (*Horneff*, Abstract), nor anywhere in *Horneff* is a method of uniformly dispersing air in a process chamber disclosed expressly or inherently as recited in claim 21. Specifically, the preamble of claim 21 limits the method to a process chamber. The preamble should be read as a limitation in as much as the step of providing air flow refers to “the process chamber” thus indicating the recitation of a process chamber in the preamble for antecedent basis.

Claims 22-25 are allowable based on the concurrent Amendment to the drawings as discussed above. Removal of the rejection is respectfully requested.

Claims 4, 7, 9, 11, 19, 24, and 25 have been amended to remove the recitation of “capable of” as required. Removal of the pending rejection is requested and allowance earnestly solicited.

Removal of the pending rejection under 35 U.S.C. §102(b) to claims 1-3, 5, 8-11, 14-16, 19 and 21-25 is respectfully requested and allowance is earnestly solicited.

### ***Claim Rejection 35 U.S.C. § 103***

#### **35 U.S.C. § 103(a)**

Claims 12 and 20 stand rejected under 35 U.S.C. §103(a) in view of *Shuler* (United States Patent Number 3,975,995) in view of *Horneff*. The rejection is respectfully traversed.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). (emphasis added). See also *In re Wilson*, 165 U.S.P.Q. 494 (C.C.P.A. 1970). Applicant respectfully forwards the arguments made with respect to the Office's 35 U.S.C. §102(b) rejection and in particular the arguments for Claims 1 from which Claim 12 depends. As the Examiner is aware, "it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification." *In re Lalu*, 747 F.2d 703, 223 USPQ 1257, 1258 (Fed. Cir. 1984). *Shuler* discloses an air diffuser which is not connected to the plenum. *Horneff* teaches a fan connected to a supply duct rather than to a plenum as recited in the present claims. Thus, combining *Shuler* and *Horneff* would result in a system with a duct for distributing air and a system wherein an air diffuser is not connected to the plenum. Absent substantiation, it is respectfully submitted that there is no motivation, teaching or suggestion to combine *Shuler* with *Horneff* and thus a *prima facie* case of obviousness has not been established. Applicants respectfully request the rejection under 35 U.S.C. §103(a) to Claims 12 and 20 be withdrawn.

Claim 13 stand rejected under 35 U.S.C. §103(a) over *Horneff* in view of *Gardner*. As stated previously, "to establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." *In re Royka*, 180 U.S.P.Q. 580 (C.C.P.A. 1974). (emphasis added).

Neither *Horneff* nor *Gardner* to teach a plate (disposed in an airflow) including a first and second side with a plurality of "uniformly dispersed" holes penetrating the first and second sides such that the second side experiences a pressure less than the pressure experience by the first side. *Horneff* teaches a system employing ducts to distribute airflow at various angles to the ceiling. *Horneff* Col. 4, lines 43-47. *Gardner* teaches a diffuser extending

through a baffle plate to deliver a flow of air (through a limited portion of the plate) such that room air is drawn into the heat exchanger area (above the baffle plate). Gardner Col. 9, lines 26-32 and FIG. 2. In order to establish a prima facie case of obviousness

[I]t is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification. *In re Lulu*, 747 F.2d 703, 223 USPQ 1257, 1258 (Fed. Cir. 1984).

Gardner does not correct the deficiencies of the *Horneff* reference because Gardner discloses a baffle plate 30 which is a solid (lacks protrusion) to generate a pressure drop. Gardner FIG. 1. To introduce holes penetrating the baffle plate of Gardner would reduce the effectiveness of system disclosed in Gardner. Moreover, Gardner teaches away from the presently claimed device by employing a solid baffle and utilizing the baffle plate to draw room air into the system. Employing the system disclosed in Gardner additionally would have the tendency to entrain waste and debris rather than remove the material. Withdrawal of the rejection is respectfully requested.

#### ***Marked-Up Version of Amendment***


Attached hereto is a marked-up version of the changes made to the specification and claims by the present amendment. The attached marked-up version is captioned "***VERSION WITH MARKINGS TO SHOW CHANGES MADE***".

### CONCLUSIONS

In light of the forgoing, reconsideration and allowance of the claims is earnestly solicited.

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Respectfully submitted,  
LSI Logic, Inc.

By   
Nathan T. Grebasch  
Reg. No: 48,600

SUITER & ASSOCIATES PC  
14301 FNB Parkway, Suite 220  
Omaha, NE 68154-5299  
Telephone: (402) 496-0300  
Facsimile: (402) 496-0333

## VERSION WITH MARKINGS TO SHOW CHANGES MADE

### IN THE SPECIFICATION

Please replace the paragraphs numbered 0017 and 0018 beginning at page 5, with the following rewritten paragraph:

[0017] FIG. 2 is an overview illustration of an exemplary embodiment wherein a process chamber air diffuser contains a plurality of holes and a screw type means for securing the diffuser; [and]

[0018] FIG. 3 is a flow diagram of a method for employing the air diffuser of the present invention to provide substantially laminar air flow through a process chamber[.] ;

FIG. 4 is a view of a cross-sectional area of a received initial flow of air into a plenum; and  
FIG. 5 is an overview illustration of a process chamber air diffuser containing a plurality of holes including holes having varying cross-sectional areas.

Please replace the paragraph numbered 0020 beginning at page 6, with the following rewritten paragraph:

[0020] Referring generally now to FIGS. 1 through [3]5, exemplary embodiments of the present invention are shown wherein an air diffuser is utilized to provide uniform airflow throughout a chamber, such as a process chamber for manufacturing semiconductor chips. Drawbacks to previous airflow systems have been the lack of uniformity in dispersing air in the chamber, which may lead to the entrainment of particles. Utilization of the present invention, eliminates turbulent airflow and allows for uniform airflow throughout the chamber. Additionally, the present invention has the capability of being easily retrofitted into chambers currently in use to make more efficient use of available resources.

Please replace the paragraph numbered 0024 beginning at page 7, with the following rewritten paragraph:

[0024] The air diffuser 102 may include a plurality of holes 110 through which the flow of air is directed into the chamber 112. In an embodiment, the air diffuser may form a plate with a plurality of holes penetrating through a first side and a second side of the plate. The plurality of holes 110 may be sufficient to reduce the flow of air initially received by the plenum 104. In further embodiments the plurality of holes 110 may range in size from 0.125 inches to 0.5 inches. In additional embodiments, the cross-sectional areas of the individual plurality of holes may vary as contemplated by one of ordinary skill in the art, without departing from the scope and spirit of the present invention. See generally FIG. 5, wherein the plurality of holes include holes having various cross-sectional areas, such as aperture 210A.

Please replace the paragraph numbered 0033 beginning at page 9, with the following rewritten paragraph:

[0033] Once the airflow has been generated it may have an initial cross-sectional area as air is flowed into a plenum. Connected to the plenum, disposed in the airflow is an air diffuser with a plurality of uniformly spaced holes. Disposing the air diffuser 304 in the airflow may include utilizing a means for securing the air diffuser to the plenum to prevent accidental damage to process chamber contents and ensure the flow of air through the plurality of holes. The plurality of holes in the air diffuser may have a total cross-sectional area less than that of the initial cross-sectional area. See generally FIG. 4, wherein an initial flow of air passes through the plenum inlet. The cross-sectional area of the inlet 116 is less than the total cross-sectional area of the plurality of holes penetrating the diffuser 102.

#### IN THE CLAIMS

Please amend the claims as follows:

4. (Amended) The process chamber airflow system as claimed in claim 3, wherein the air diffuser [is capable of eliminating] eliminates initial airflow turbulence entering the plenum from an air filter.

6. (Amended) The process chamber airflow system as claimed in claim 5, wherein [an] individual [hole] holes, included in the plurality of holes, have varying cross-sectional [area varies] areas.

7. (Amended) The process chamber airflow system of claim 1, wherein the air diffuser [is capable of dissipating static charges] is formed of static charge dissipating material.

9. (Amended) The process chamber airflow system of claim 1, wherein the air diffuser is [capable of being] disposed on one side of a generally cubic chamber of a semiconductor production device.

11. (Amended) The process chamber airflow system of claim 1, wherein the air diffuser [is capable of diffusing] diffuses air such that contaminate particles are [not entrained in] removed from the chamber by the chamber airflow.

17. (Amended) The process chamber airflow system as claimed in claim 13, wherein [an] individual [hole] holes, included in the plurality of holes, have varying cross-sectional [area varies] areas.

18. (Amended) The air diffuser of claim 13, wherein the plate is [is capable of dissipating static charges] formed of static charge dissipating material.

19. (Amended) The air diffuser of claim 13, wherein the air diffuser [is capable of diffusing] diffuses air with a substantially laminar flow.

21. (Amended) A method of providing substantially laminar airflow in a process chamber, comprising:

generating an initial flow of air with an initial cross-sectional area;

disposing an air diffuser with a plurality of uniformly spaced hole in the airflow[;], wherein a total cross-sectional area of the plurality of holes is less then the initial cross-sectional area;

creating a back-pressure of air due to the reduction in the cross-sectional area through the plurality of holes;

dispersing a portion of the initial airflow uniformly across the air diffuser; and

providing uniform airflow through the plurality of holes included in the air diffuser, to the process chamber.

24. (Amended) The process chamber airflow system of claim 22, wherein the air diffuser is [capable of dissipating static charges] formed of static charge dissipating material.

25. (Amended) The process chamber airflow system of claim 22, wherein the air diffuser [is capable of diffusing] diffuses air, such that contaminate particles are [not entrained in] removed from the chamber by the chamber airflow.